



U.S. Department of Energy Smart Grid Investment Grant

Technical Advisory Group Guidance Document #11^{*}

Topic: CBS Data Reporting Process

August 23, 2012

OBJECTIVE

The Department of Energy (DOE) set the expectation early on in the SGIG Funding Opportunity Announcement (FOA) that recipients who undertake a rigorous consumer behavior study (CBS) would be obliged to collect and report highly granular customer-level consumption and demographic data (hereafter referred to as “Project data”). This guidance document provides information on the data that is to be reported to the SmartGrid.gov Data Hub. The submittal of this data is consistent with the reporting requirements of the Assistance Agreement, as provided within Attachment B, Federal Assistance Reporting Checklist and Instructions.

The first part of this document describes the process through which the data should be submitted into the database repository in the section titled “Process Overview for Submission and Acceptance of CBS Data”. The second section of this document, entitled “Data Reporting Categories and Time Frame”, lists the different categories of datasets that should be submitted and provides a submittal deadline for each category. The third section of this document, entitled

^{*} The following individuals on the Lawrence Berkeley National Laboratory Technical Advisory Group (TAG) drafted and/or provided input and comments on one or more of the U.S. Department of Energy Smart Grid Investment Grant (SGIG) Technical Advisory Group Guidance Documents: Peter Cappers, Andrew Satchwell, Annika Todd and Charles Goldman (LBNL), Karen Herter (Herter Energy Research Solutions, Inc.), Roger Levy (Levy Associates), Theresa Flaim (Energy Resource Economics, LLC), Rich Scheer (Scheer Ventures, LLC), Lisa Schwartz (Regulatory Assistance Project), Richard Feinberg (Purdue University), Catherine Wolfram, Lucas Davis, Meredith Fowlie, and Severin Borenstein (University of California at Berkeley), Miriam Goldberg, Curt Puckett and Roger Wright (KEMA), Ahmad Faruqui, Sanem Sergici, and Ryan Hledik (Brattle Group), Michael Sullivan, Matt Mercurio, Michael Perry, Josh Bode, and Stephen George (Freeman, Sullivan & Company), Mary Sutter and Tami Buhr (Opinion Dynamics). In addition to the TAG members listed above, Bernie Neenan and Chris Holmes of the Electric Power Research Institute also provided comments.



“CBS Data Dictionary”, provides a comprehensive description of each variable within every dataset that should be submitted.

BACKGROUND

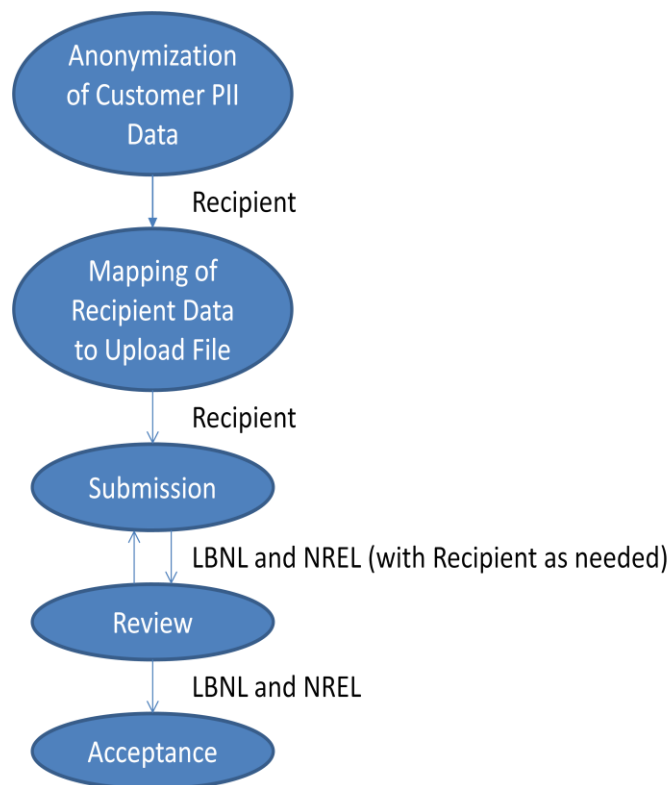
DOE provided a preliminary data dictionary in Appendix D of the Metrics and Benefits Guidebook, which expanded the data reporting requirement for utilities undertaking rigorous consumer behavior studies to include the highly granular customer-level Project data as well as more aggregate metrics produced by each recipient’s own study evaluation effort. DOE then provided a guidance document that described the totality of data that should be *collected* by SGIG recipients undertaking consumer behavior studies, hereafter referred to as CBS data.¹

This document describes the process by which this CBS data is to be reported, including a data submittal time frame, a description of the way in which the Project data is to be anonymized and uploaded to the National Renewable Energy Laboratory’s Data Hub, and a CBS data dictionary.

PROCESS OVERVIEW FOR SUBMISSION AND ACCEPTANCE OF CBS DATA

The process for recipients submitting CBS data and having it accepted into the database repository is shown in the diagram below. The bubbles represent the various steps in the process and the names listed between the processes represent the party responsible for executing that process. For example, the SGIG recipient is responsible for anonymizing the customer Personally Identifiable Information (PII) data, whereas Lawrence Berkeley National Laboratory (LBNL) and National Renewable Energy Laboratory (NREL) are jointly responsible for reviewing and accepting the CBS data submitted by each SGIG recipient. The steps of the process are described in more detail below, but are generally similar to the data submission and acceptance processes already used by recipients for other SGIG data, such as build metric data. The primary differences for CBS data, relative to build metric data, are the anonymization of PII step and the format of the data submission files.

¹ See Guidance Document #10: Consumer Behavior Study Data Collection Requirements for more details



Description of steps:

- 1. Anonymization of Customer PII Data:** Recipients will anonymize PII through either their own methods or through a web service provided by NREL. In order to respect privacy concerns, no raw PII data will ever leave the recipient's system. Anonymization of customer PII will allow the recipient to submit data records without PII, but still allow for geographic and network topological analysis of the data at a customer level.
 - a.** Recipient's own anonymization method: SGIG recipients with expertise in data anonymization may develop their own algorithms to remove any PII from the submitted data, subject to the proviso that the methods produce a data record that conforms to the CBS data reporting templates.
 - b.** NREL's web service anonymization method: NREL has expertise in data anonymization and developing algorithms to establish differential privacy in databases. The same algorithms used to protect financial, medical and credit card data in commercial transactions and databases will be applied to this CBS data in order to safeguard individual customer privacy.



2. **Mapping of Recipient Data to Upload File:** SGIG recipients likely have stored the various elements of CBS data in a different format and in various locations across their IT systems. As such, an algorithm will have to be developed that translates the data from the format it is stored on the SGIG recipient's IT systems to the format associated with the CBS data reporting template. To facilitate this algorithm construction, a database dictionary is described below for the CBS data reporting template. The database dictionary details and describes the data to be submitted. NREL and LBNL will work with the recipients to provide tools and external database access to populate data fields that the recipient is not capable of populating.
3. **Submission:** The recipients will submit data in the CBS data reporting template file format, defined in this document and its appendices (including two excel spreadsheets). When the data submission is received by NREL, the recipient will receive an e-mail verifying submission of the data. Multiple secure methods of data submission (e.g. FTP, web service, physical mailing of hard drives, etc.) will be supported. Each recipient will work with NREL to determine the most applicable and acceptable method.
4. **Review:** Data checks will be performed by NREL and LBNL to validate the quality, continuity and completeness of the submitted CBS data. If deficiencies are identified in the submitted CBS data, the recipient will be notified by e-mail of the specific nature of the deficiency. NREL and LBNL will work with the recipient to resolve the deficiencies in a timely manner. Once these deficiencies are corrected, the recipient will need to re-submit corrected data files. Once the submitted data files are reviewed and no deficiencies are identified, the data files will move to the accepted state.
5. **Accepted:** When the submitted data files are accepted, the recipient will receive an acceptance e-mail. At this point the submitted data will be loaded into a secure database for subsequent analysis.

DATA REPORTING CATEGORIES AND TIME FRAME

There are 12 different categories of CBS data that will need to be reported by recipients, indicated by different data upload files listed in the table below and described in more detail in the following section. Each CBS data category may have up to three submittal deadlines as indicated in the table below: within six months of assigning customers to experimental cells; within two months of submitting an interim evaluation report to DOE (if applicable); and within two months of submitting a final evaluation report to DOE.² Each data category should be submitted in its totality

² Given the diversity of schedules that the different consumer behavior studies are on, some/all of these reporting deadlines may have already passed. In that case, the recipient should attempt to submit the data as soon as possible.



by the required deadline even if there have been no changes to the data since the previous required deadline. Each recipient will be asked to submit the entirety of their required and applicable CBS data to the Data Hub in a form and media mutually agreed upon.

For an extensive description of each dataset, see the next section, “CBS Data Dictionary”.

Upload File Name (Data Category)	Data Level	Description	Submittal Deadline for Recipient to Provide Data		
			Within 6 months of customer assignment	Within 2 months of submitting interim evaluation	Within 2 months of submitting final evaluation
Exp Cell	Utility	For each experimental cell (i.e., each control and treatment group), a description of the rates, technology, and group requirements	●	●	●
Recruitment Data	Customer	Each recruitment contact made to each customer	●	●	●
Assignment Data	Customer	Each customer’s assignment into each experimental cell (e.g., date of assignment, eligibility, etc.)	●	●	●
Survey Admin	Utility	A list of all of the different surveys administered	●	●	●
Survey Results	Customer	Each customer’s response to each survey	●	●	●
Tariff Data	Utility	A list of all of the different tariff rates that occurred during and 12 months prior to the study	-	●	●
Customer Tariff Data	Customer	The tariff rates experienced by each customer during and 12 months prior to the study	-	●	●



Event Data	Utility	A list of all of the events that occurred during and 12 months prior to the study	-	●	●
Cust Event Note	Customer	The events experienced by each customer during and 12 months prior to the study	-	●	●
Billing Data	Customer	Monthly billing information for each customer during and 12 months prior to the study	-	●	●
Time Series	Customer	Hourly energy usage data for each customer during and 12 months prior to the study	-	●	●
Document Files	Utility	Copies of all applicable documents relevant to the study (e.g., tariff sheets, marketing collateral, etc.)	●	●	●
Evaluation Data	Utility	List of the recipient's evaluation efforts	-	●	●



CBS DATA DICTIONARY

This section provides a comprehensive description of all of the data elements that are required to be reported by SGIG recipients undertaking consumer behavior studies (for an overview of all of the different datasets, see the previous section, “Data Reporting Categories and Time Frame”). The accompanying appendices, “Non Time Series Data File Formats.xlsx” and “Time Series Data File Formats.xlsx”, provide examples of how the data should be organized to allow the CBS data to be loaded into the structured database.

The datasets were categorized into 13 different files in order to minimize the amount of repetitive data (e.g., each customer’s treatment group is listed only once rather than being listed in conjunction with each hour of data provided for that customer). Many of the variables that are listed in the sections that follow were created to accommodate a wide variety of different types of study implementations. However, for each particular recipient, many of the data points may be identical to each other (e.g., the date that a technology is installed may be the same date that the technology is activated). NREL and LBNL will be available to discuss the data requirements with each recipient.

The data elements reported herein are all directly related to the current vision for the cross-project CBS evaluation effort LBNL and its subcontractors will be undertaking on behalf of DOE. For each table, the columns on the left indicate the reason that each variable is important to collect for the CBS evaluation effort. Ideally every variable would be provided by an SGIG recipient undertaking a rigorous consumer behavior study. However, we understand that it may be infeasible or impractical to report some of the data listed. At a minimum, variables listed as “Essential” and “Important” are required for data analysis purposes and should be reported by each SGIG recipient undertaking a rigorous consumer behavior study. If any difficulties arise, LBNL will work with each recipient on a case-by-case basis to determine how best to meet the SGIG reporting requirement of CBS data for that recipient’s particular situation.



Variable Categories		
Analysis		These variables are needed to perform analysis at the utility level in order to answer research questions of interest for specific utilities
<input checked="" type="radio"/>	Essential	Necessary in order to answer primary policy questions about the effectiveness of time based rates or enabling technologies (submission of these variables is required)
<input checked="" type="radio"/>	Important	Necessary in order to answer secondary research questions about whether a technology or a rate had a larger effect for different selected customer demographic groups (submission of these variables is required)
<input type="radio"/>	Useful	Necessary to answer tertiary policy questions of interest (e.g., why some customers responded to rates while others did not, if some event notifications were more successful (e.g., phone notifications vs. email notifications) (submission of these variables is strongly encouraged)
Robustness		These variables are needed to perform robustness checks on the utility level analysis (i.e., make sure that the estimated results from the analysis are valid)
<input checked="" type="radio"/>	Essential	Necessary for data cleaning and robustness checks (submission of these variables is required)
<input type="radio"/>	Useful	Nice to have for additional robustness checks (submission of these variables is strongly encouraged)
Meta Analysis		These variables are needed to group the utility level results together into a meta analysis in order to answer research questions of interest across all utilities
<input checked="" type="radio"/>	Essential	Necessary to perform any cross cutting meta analysis across utilities (submission of these variables is required)
<input type="radio"/>	Useful	Nice to have for additional meta analyses (submission of these variables is strongly encouraged)



Exp Cell Data Upload File (Description of Control and Treatment Groups)

The purpose of the data in this file is to list and describe for the various important rate, technology and information elements that represent each experimental cell (i.e., each control group, treatment group, and group of customers not in the study).

Data for this file should be uploaded for each of the following:

- Each Experimental Cell
 - Each control group
 - Each treatment group
 - Each group of customers not in the study
- Time Periods for Tariff data
 - Historical Data (12 months prior to beginning of treatment)
 - Data throughout the study duration
- There should be one entry for each experimental cell (i.e., each control group, treatment group, and group of customers not in the study)
- Unique key fields for this file are denoted by an asterisk*

Analysis Robust Meta	Variable Name	Description	Type	Unit	Enumeration
	● ● ● ProjectID*	The SGIG project ID number	ENUM		
	● ● ● ExpCellID*	Name of each control group, treatment group, and group of customers not in the study (e.g., C1, C2, T1, Cntl1, A1, B2, N1)	ALPHANUMERIC		



-- ○ -- ExpCellStartDate	The first date that any customer was exposed to the treatment specific to this experimental cell (the rates, technology, and/or information given below)	DATE
-- ○ -- ExpCellEndDate	The last date that any customer was exposed to the treatment specific to this experimental cell (the rates, technology, and/or information given below)	DATE
● -- -- TariffID1	The first tariff rate (as defined in the Customer Tariff Data Upload File) that customers in this group are placed on (e.g., their rate 12 months prior to the beginning of the study)	ALPHANU MERIC
● -- -- TariffID2	The second tariff rate (as defined in the Customer Tariff Data Upload File) that customers in this group are placed on, if applicable	ALPHANU MERIC
● -- -- TariffID3	The third tariff rate (as defined in the Customer Tariff Data Upload File) that customers in this group are placed on, if applicable	ALPHANU MERIC



● -- -- TariffID4	The fourth tariff rate (as defined in the Customer Tariff Data Upload File) that customers in this group are placed on, if applicable	ALPHANU MERIC	
● -- -- TariffID5	The fifth tariff rate (as defined in the Customer Tariff Data Upload File) that customers in this group are placed on, if applicable	ALPHANU MERIC	
-- ● ● HasBillProtection	Bill protection is provided for this group at some point during the study	BOOLEAN	BOOLEAN Options: YES NO
-- ○ -- BillProtectionDesc	Description of bill protection given to this group	ALPHANU MERIC	
● -- -- EducationID	ID number of the education given to this group. Each EducationID should be identical to the name, excluding the extension, of the corresponding education material file uploaded in the "Document Upload File" section.	ALPHANU MERIC	e.g. mailA_2012 mailB_2012 emailA_2013
● -- -- EducationDescr	Description of education given to this group	ALPHANU MERIC	



● -- -- InfoTechID	ID number of the informational technology given to this group. Each InfoTechID should be identical to the name, excluding the extension, of the corresponding informational technology description file uploaded in the "Document Upload File" section.	ALPHANUMERIC	e.g. IHD_1 IHD_2
● -- -- InfoTechDescr	Description of informational technology given to this group	ALPHANUMERIC	
● -- -- ControlTechID	ID number of the control technology given to this group. Each ControlTechID should be identical to the name, excluding the extension, of the corresponding control technology description file uploaded in the "Document Upload File" section.	ALPHANUMERIC	e.g. PCT_1 PCT_2
● -- -- HasUtilityControl	The control technology given to this group has utility control	BOOLEAN	BOOLEAN Options: YES NO
● -- -- ControlTechDescr	Description of control technology given to this group	ALPHANUMERIC	



-- <input type="radio"/> <input type="radio"/> RequiresEligibleAMI	Assignment to this group requires AMI	BOOLEAN	BOOLEAN Options: YES NO
-- <input type="radio"/> <input type="radio"/> RequiresEligibleHistoricalUsage	Assignment to this group requires minimum amount of historical usage	BOOLEAN	BOOLEAN Options: YES NO
-- <input type="radio"/> <input type="radio"/> RequiresEligibleTariff	Assignment to this group requires customer to currently be on an eligible tariff rate	BOOLEAN	BOOLEAN Options: YES NO
-- <input type="radio"/> <input checked="" type="radio"/> RequiresEligibleInternetAccess	Assignment to this group requires customer to currently have an eligible type of internet access	BOOLEAN	BOOLEAN Options: YES NO
-- <input type="radio"/> <input checked="" type="radio"/> RequiresNonParticipation	Assignment to this group requires non-participation in an existing DR program	BOOLEAN	BOOLEAN Options: YES NO
-- <input type="radio"/> <input type="radio"/> RequiresEligibleNonUtilityEmployee	Assignment to this group requires customer to NOT be a utility employee to participate	BOOLEAN	BOOLEAN Options: YES NO



-- <input type="radio"/> <input checked="" type="radio"/> RequiresEligibleCentralAC	Assignment to this group requires customer to currently have central air conditioning	BOOLEAN	BOOLEAN Options: YES NO
-- <input type="radio"/> <input checked="" type="radio"/> RequiresEligibleWaterHeater	Assignment to this group requires customer to currently have an eligible water heater	BOOLEAN	BOOLEAN Options: YES NO
-- <input type="radio"/> <input checked="" type="radio"/> RequiresEligiblePoolPump	Assignment to this group requires customer to currently have an eligible pool pump	BOOLEAN	BOOLEAN Options: YES NO
-- <input type="radio"/> <input checked="" type="radio"/> RequiresEligibleYearRoundResident	Assignment to this group requires customer to currently be a year-round resident	BOOLEAN	BOOLEAN Options: YES NO
-- <input type="radio"/> <input type="radio"/> RequiresEligibleStudyDuration	Assignment to this group requires customer to be a resident for the duration of the study	BOOLEAN	BOOLEAN Options: YES NO
-- <input type="radio"/> <input type="radio"/> RequiresEligiblePaymentStanding	Assignment to this group requires customer to currently be in eligible payment standing	BOOLEAN	BOOLEAN Options: YES NO



-- <input type="radio"/> <input type="radio"/> RequiresEligibleAddressMatch	Assignment to this group requires customer to have their service and billing address match	BOOLEAN	BOOLEAN Options: YES NO
-- <input type="radio"/> <input checked="" type="radio"/> RequiresEligibleDwellingType	Assignment to this group requires customer to currently be in an eligible dwelling type	BOOLEAN	BOOLEAN Options: YES NO

Recruitment Data Upload File (Recruitment Contact for Each Customer)

The purpose of the data in this file is to list and describe each recruitment contact made to each customer. In order to better understand how customers accept AMI-enabled time-based rate programs and control/information technology, DOE would like each recipient to report information about their recruitment effort.

This data will be used to determine whether customers respond differentially to different types of marketing and recruitment efforts. It is possible that even subtle differences in wording can lead to different response rates. By having access to all recipients' marketing and recruitment materials, DOE can examine differences in tactics across recipients, which will hopefully provide insights on which types of approaches are most effective.

In addition, a copy of all marketing collateral should be uploaded in the "Document Upload File" section. Each CollateralID used below should be identical to the name, excluding the extension, of the corresponding marketing collateral file uploaded in the "Document Upload File" section.

Data for this file should be uploaded for each of the following:

- Customers



- Each treatment and control customer
- A representative sample of those who were invited to participate in the study but declined the offer (each recipient should work with their TAG to determine the most appropriate size of the representative sample)
- Frequency
 - Each recruitment contact
- There should be one entry for each contact for each customer
- Unique key fields for this file are denoted by an asterisk*

Analysis Robust Meta	Variable Name	Description	Type	Unit	Enumeration
	● ● ● CustomerID*	Unique customer identifier	ALPHANU MERIC		
	● ● ● UsagePointID*	Geographic identifier for this customer's location	ALPHANU MERIC		



● ● ● UsagePointType	The type of geographic identifier used for this customer's location. Census block data should be the level of geographic identifier reported. If census block data is not readily available, NREL can provide a web service that a recipient can use on their internal system to convert an address into a census block level geographic identifier. If a recipient has concerns about reporting census block data, LBNL will work with that recipient to determine the most appropriate level of geographic identifier (e.g., census block group, zip code, etc.).	ENUM	ENUM Options: CENSUS BLOCK CENSUS BLOCK GROUP CENSUS TRACT ZIP CODE PLUS FOUR ZIP CODE
● ● ● ProjectID*	Unique SGIG project ID number	ENUM	
● ● ● ContactID*	Unique recruitment wave identifier. If a customer is contacted multiple times, there should be one entry for each contact. (E.g., if a customer is contacted two times on email and once on the phone, there should be three entries for that customer.)	ALPHANUMERIC	



-- ○ ○ ContactDate	Date of this contact to this customer (date when mailer or periodical was sent out, date when phone call was made, date when email was sent, date when billboard was erected, date when internet advertisement was posted, etc)	DATE	
-- ○ ○ CollateralID	ID number of the marketing collateral given to this customer during this contact. Each CollateralID should be identical to the name, excluding the extension, of the corresponding marketing collateral file uploaded in the "Document Upload File" section.	ALPHANUMERIC	
-- ○ ○ ContactType_DirectMail	During this contact, this customer was exposed to direct mail recruitment collateral	BOOLEAN	BOOLEAN Options: YES NO NULL
-- ○ ○ ContactType_Periodical	During this contact, this customer was exposed to periodical recruitment collateral	BOOLEAN	BOOLEAN Options: YES NO NULL
-- ○ ○ ContactType_Billboard	During this contact, this customer was exposed to billboard recruitment collateral	BOOLEAN	BOOLEAN Options: YES NO NULL



-- <input type="radio"/> <input type="radio"/> ContactType_Internet	During this contact, this customer was exposed to internet recruitment collateral	BOOLEAN	BOOLEAN Options: YES NO NULL
-- <input type="radio"/> <input type="radio"/> ContactType_Phone	During this contact, this customer was exposed to phone recruitment collateral	BOOLEAN	BOOLEAN Options: YES NO NULL
-- <input type="radio"/> <input type="radio"/> ContactType_TV	During this contact, this customer was exposed to TV recruitment collateral	BOOLEAN	BOOLEAN Options: YES NO NULL
-- <input type="radio"/> <input type="radio"/> ContactType_Radio	During this contact, this customer was exposed to radio recruitment collateral	BOOLEAN	BOOLEAN Options: YES NO NULL
-- <input type="radio"/> <input type="radio"/> ContactType_Email	During this contact, this customer was exposed to email recruitment collateral	BOOLEAN	BOOLEAN Options: YES NO NULL
-- <input type="radio"/> <input type="radio"/> ContactType_DirectSale	During this contact, this customer was exposed to direct sale recruitment collateral	BOOLEAN	BOOLEAN Options: YES NO NULL
-- <input type="radio"/> <input type="radio"/> ContactType_SocialNetwork	During this contact, this customer was	BOOLEAN	BOOLEAN Options:



exposed to social network recruitment	YES
collateral	NO
	NULL

Assignment Data Upload File (Assignment of Each Customer into Experimental Cell)

The purpose of the data in this file is to list and describe the specific elements associated with enrollment into experimental cells for each customer, including types and dates of eligibility, technology and educational treatments, tariff rates, and other attributes. It is imperative that DOE understand the experimental cell that each participating customer was assigned to. This data will be used to examine whether differences in rates, information, and technologies both between and across recipients lead to differences in energy use. For example, two different educational programs run by two different recipients may have very different informational content. By collecting as much detail as possible about the customer experience, DOE can try to determine which elements have the most impact on energy use.

Some customers who chose to participate in these consumer behavior studies will be unable to complete the study due to a variety of reasons. This data will be used to gain a better understanding into what causes or helps explain attrition so that future time-based rate programs can better retain customers.

Data for this file should be uploaded for each of the following:

- Customers
 - Each treatment and control customer
 - A representative sample of those who were invited to participate in the study but declined the offer (each recipient should work with their TAG to determine the most appropriate size of the representative sample)
- Frequency
 - One per customer
- Unique key fields for this file are denoted by an asterisk*



Analysis Robust Meta	Variable Name	Description	Type	Unit	Enumeration
	● ● ● CustomerID*	Unique customer identifier	ALPHANU MERIC		
	● ● ● UsagePointID*	Geographic identifier for this customer's location	ALPHANU MERIC		
	● ● ● UsagePointType	The type of geographic identifier used for this customer's location. Census block data should be the level of geographic identifier reported. If census block data is not readily available, NREL can provide a web service that a recipient can use on their internal system to convert an address into a census block level geographic identifier. If a recipient has concerns about reporting census block data, LBNL will work with that recipient to determine the most appropriate level of geographic identifier (e.g., census block group, zip code, etc.).	ENUM		ENUM Options: CENSUS BLOCK CENSUS BLOCK GROUP CENSUS TRACT ZIP CODE PLUS FOUR ZIP CODE
	● ● ● ProjectID*	Unique SGIG project ID number	ENUM		



● ● ● ExpCellID*	Name of the control group, treatment group, or group of customers not in the study that this customer was assigned to (e.g., C1, C2, T1, Cntl1, A1, B2, N1)	ALPHANUMERIC	
● -- -- IsEnrolled	This customer decided to enroll (or was automatically enrolled or assigned) in their experimental cell	BOOLEAN	BOOLEAN Options: YES NO NULL
● -- -- EnrollmentDate	Date that this customer was enrolled (or automatically assigned) in their experimental cell	DATE	
-- ● ● ExclusionCriteria	If this customer was excluded from the group they were assigned to after being enrolled, the reason for exclusion (e.g., technology communications problem)	ENUM	ENUM Options: INCOMPATIBILITY OF TECHNOLOGY WITH HOUSEHOLD EQUIPMENT TECHNOLOGY COMMUNICATIONS PROBLEM OTHER NULL



● -- -- ExpCellStartDate	Date that this customer was assigned to their experimental cell (if customer is assigned to a group and then must decide to enroll, this date will be before the EnrollmentDate; if customer enrolls in the study and then is assigned to their group then this date will be after the EnrollmentDate; if customer is automatically assigned to a group then this date will be the same as the EnrollmentDate)	DATE	
● -- -- ExpCellEndDate	Date that this customer un-enrolled from their assigned group	DATE	
-- ○ -- ReasonForExit	Reason that this customer un-enrolled from their assigned group (e.g., opt-out, change of service address, end of study)	ENUM	ENUM Options: CHANGE OF SERVICE ADDRESS OPT OUT OTHER NULL
-- ○ ● BillProtectionStartDate	Date that bill protection for this customer started (if never available for this customer leave blank)	DATE	
-- ○ ● BillProtectionEndDate	Date that bill protection for this customer ended (if never available for this customer leave blank)	DATE	



● -- -- EdTreatStartDate	Date that educational treatment for this customer started (if never available for this customer leave blank)	DATE
● -- -- EdTreatEndDate	Date that educational treatment for this customer ended (if never available for this customer leave blank)	DATE
● -- -- InfoTechInstallDate	Date that information technology for this customer was installed (if never available for this customer leave blank)	DATE
● -- -- InfoTechUninstallDate	Date that information technology for this customer was uninstalled (if never available for this customer leave blank)	DATE
● -- -- InfoTechActiveDate	Date that information technology for this customer was activated (if never available for this customer leave blank)	DATE
● -- -- InfoTechDeactivateDate	Date that information technology for this customer was deactivated (if never available for this customer leave blank)	DATE
● -- -- InfoTechTreatStartDate	Date that information technology treatment for this customer began (if never available for this customer leave blank)	DATE



● -- -- InfoTechTreatEndDate	Date that information technology treatment for this customer ended (if never available for this customer leave blank)	DATE
● -- -- ControlTechInstallDate	Date that control technology for this customer was installed (if never available for this customer leave blank)	DATE
● -- -- ControlTechUninstallDate	Date that control technology for this customer was uninstalled (if never available for this customer leave blank)	DATE
● -- -- ControlTechActiveDate	Date that control technology for this customer was activated (if never available for this customer leave blank)	DATE
● -- -- ControlTechDeactivateDate	Date that control technology for this customer was deactivated (if never available for this customer leave blank)	DATE
● -- -- ControlTechTreatStartDate	Date that control technology treatment for this customer began (if never available for this customer leave blank)	DATE



● -- -- ControlTechTreatEndDate	Date that control technology treatment for this customer ended (if never available for this customer leave blank)	DATE	
-- ○ ○ HasRequiredAMI	If AMI is required based on Exp Cell Data Upload File, customer has required AMI	BOOLEAN	BOOLEAN Options: If this is not a requirement based on Exp Cell Data Upload File: N/A If this is a requirement based on Exp Cell Data Upload File: YES or NO
-- ○ ○ HasRequiredHistoricalUsage	If minimum amount of historical usage is required based on Exp Cell Data Upload File, customer has required minimum amount of historical usage	BOOLEAN	BOOLEAN Options: If this is not a requirement based on Exp Cell Data Upload File: N/A If this is a requirement based on Exp Cell Data Upload File: YES or NO
-- ○ ○ HasRequiredTariff	If eligible tariff rate is required based on Exp Cell Data Upload File, customer is currently on an eligible tariff rate	BOOLEAN	BOOLEAN Options: If this is not a requirement based on Exp Cell Data Upload File: N/A If this is a requirement based on Exp Cell Data Upload File: YES or NO



-- <input type="radio"/> <input type="radio"/> HasRequiredInternetAccess	If eligible type of internet access is required based on Exp Cell Data Upload File, customer currently has an eligible type of internet access	BOOLEAN	BOOLEAN Options: If this is not a requirement based on Exp Cell Data Upload File: N/A If this is a requirement based on Exp Cell Data Upload File: YES or NO
-- <input type="radio"/> <input type="radio"/> HasRequiredNonParticipation	If non-participation in an existing DR program is required based on Exp Cell Data Upload File, customer is not participating in an existing DR program	BOOLEAN	BOOLEAN Options: If this is not a requirement based on Exp Cell Data Upload File: N/A If this is a requirement based on Exp Cell Data Upload File: YES or NO
-- <input type="radio"/> <input type="radio"/> HasRequiredNonUtilityEmployee	If not being a utility employee is required based on Exp Cell Data Upload File, customer is NOT a utility employee as required to participate	BOOLEAN	BOOLEAN Options: If this is not a requirement based on Exp Cell Data Upload File: N/A If this is a requirement based on Exp Cell Data Upload File: YES or NO
-- <input type="radio"/> <input type="radio"/> HasRequiredCentralAC	If a central air conditioning system is required based on Exp Cell Data Upload File, customer currently has a required central air conditioning system	BOOLEAN	BOOLEAN Options: If this is not a requirement based on Exp Cell Data Upload File: N/A If this is a requirement based on Exp Cell Data Upload File: YES or NO



-- <input type="radio"/> <input type="radio"/> HasRequiredWaterHeater	If an eligible water heater is required based on Exp Cell Data Upload File, customer currently has a required eligible water heater	BOOLEAN	BOOLEAN Options: If this is not a requirement based on Exp Cell Data Upload File: N/A If this is a requirement based on Exp Cell Data Upload File: YES or NO
-- <input type="radio"/> <input type="radio"/> HasRequiredPoolPump	If an eligible pool pump is required based on Exp Cell Data Upload File, customer currently has a required eligible pool pump	BOOLEAN	BOOLEAN Options: If this is not a requirement based on Exp Cell Data Upload File: N/A If this is a requirement based on Exp Cell Data Upload File: YES or NO
-- <input type="radio"/> <input type="radio"/> HasRequiredYearRoundResident	If year-round residency is required based on Exp Cell Data Upload File, customer currently is a year-round resident	BOOLEAN	BOOLEAN Options: If this is not a requirement based on Exp Cell Data Upload File: N/A If this is a requirement based on Exp Cell Data Upload File: YES or NO
-- <input type="radio"/> <input type="radio"/> HasRequiredStudyDuration	If residency for the duration of the study is required based on Exp Cell Data Upload File, customer is a resident for the duration of the study	BOOLEAN	BOOLEAN Options: If this is not a requirement based on Exp Cell Data Upload File: N/A If this is a requirement based on Exp Cell Data Upload File: YES or NO



-- <input type="radio"/> <input type="radio"/> HasRequiredPaymentStanding	If eligible payment standing is required based on Exp Cell Data Upload File, customer is currently in eligible payment standing	BOOLEAN	BOOLEAN Options: If this is not a requirement based on Exp Cell Data Upload File: N/A If this is a requirement based on Exp Cell Data Upload File: YES or NO
-- <input type="radio"/> <input type="radio"/> HasRequiredAddressMatch	If a service and billing address match is required based on Exp Cell Data Upload File, customer has the required service and billing address matching	BOOLEAN	BOOLEAN Options: If this is not a requirement based on Exp Cell Data Upload File: N/A If this is a requirement based on Exp Cell Data Upload File: YES or NO
-- <input type="radio"/> <input type="radio"/> HasRequiredDwellingType	If an eligible dwelling type is required based on Exp Cell Data Upload File, customer is in an eligible dwelling type	BOOLEAN	BOOLEAN Options: If this is not a requirement based on Exp Cell Data Upload File: N/A If this is a requirement based on Exp Cell Data Upload File: YES or NO

Survey Admin Data Upload File (List of Recipient's Surveys)

The purpose of the data in this file is to list and describe each survey that is administered, in order to obtain some summary information on the survey efforts undertaken by each recipient to collect this customer characteristic and demographic data.



In addition, a copy of all survey instrument(s) should be uploaded in the “Document Upload File”. Each SurveyID used below should be identical to the name, excluding the extension, of the corresponding survey instrument file uploaded in the “Document Upload File”.

Data for this file should be uploaded for each of the following:

- Each Survey Administered
- There should be one entry for each survey that is administered
- Unique key fields for this file are denoted by an asterisk*

Analysis Robust Meta	Variable Name	Description	Type	Unit	Enumeration
● ● ●	ProjectID*	The SGIG project ID number	ENUM		e.g. 09-0111 09-0172
● ● ●	PrimeRecipient	The name of the SGIG Recipient	ENUM		ENUM Options: City of Fort Collins Minnesota Power Lakeland Electric Marblehead Municipal Light Department FirstEnergy Service Ohio NV Energy , Inc. NV Energy , Inc. Oklahoma Gas and Electric Detroit Edison Company City of Auburn



Sacramento Municipal Utility District
Vermont Transco, LLC
Vermont Transco, LLC

● ● ● SurveyID*	Unique survey identifier. There should be one entry for each survey that is administered. Surveys should be considered different and have unique IDs if their wording or appearance is different or if any of the fields below differs. E.g., surveys administered with different start dates should have different IDs. Each SurveyID should be identical to the name, excluding the extension, of the corresponding survey instrument file uploaded in the "Document Upload File" section.	ALPHANUMERIC
-- ● ○ SurveyInstrumentDescription	Briefly describe the survey effort associated with this survey ID	ALPHANUMERIC
-- ● ○ SurveyTargetAudience	Audience the survey was administered to (e.g., control group, treatment group, etc.)	ALPHANUMERIC
-- ● ● SurveyStartDate	Date survey was administered	DATE
-- ● ● SurveyEndDate	Date survey was ended	DATE



-- ● ● SurveyModalityType	Modality of survey (e.g., mail, phone call)	ENUM	ENUM Options: MAIL PHONE INTERNET DOOR-TO-DOOR NULL
● ○ ● SurveyType	Type of survey (i.e., enrollment, pre-treatment, event, post-treatment)	ENUM	ENUM Options: PRE-ENROLLMENT ENROLLMENT PRE-TREATMENT EVENT POST-TREATMENT NULL
-- ● ● NumSurveyed	Number of surveys solicited	INTEGER [COUNT]	
-- ● ● NumFullComplete	Number of surveys fully completed	INTEGER [COUNT]	
-- ● ● NumPartialComplete	Number of surveys partially completed	INTEGER [COUNT]	
-- ○ ○ NumRefuse	Number of surveys returned unopened (mail) or refused (phone)	INTEGER [COUNT]	
-- ○ ○ NumNotComplete	Number of surveys not returned (mail) or unable to be contacted (phone)	INTEGER [COUNT]	



-- ○ ○ NumOtherIncomplete	Number of surveys returned incomplete (mail) or unable to be interviewed (phone)	INTEGER [COUNT]
-- ○ ○ ResponseRate3	Response Rate 3 (RR3, described in Appendix F on p.25 of Guidance Document #9)	DECIMAL [COUNT]
-- ○ ○ ResponseRate4	Response Rate 4 (RR4, described in Appendix F on p.25 of Guidance Document #9)	DECIMAL

Survey Results Data Upload File (Each Customer's Survey Responses)

The purpose of the data in this file is to list and describe all responses to surveys for each participating customer that was chosen for surveying.

DOE believes that one of the major contributions of these studies is to provide a richer understanding of the segmentation of customer acceptance and response to AMI-enabled time-based rate programs and control/information technology. This segmentation is only possible, however, if demographic and other information is collected by recipients that more fully describes a customer's situation and surroundings.

Data for this file should be uploaded for each of the following:

- Customers
 - Each treatment and control customer



- A representative sample of those who were invited to participate in the study but declined the offer (each recipient should work with their TAG to determine the most appropriate size of the representative sample)
- Frequency
 - Each survey administered
- There should be one entry for each survey administered for each customer
- Unique key fields for this file are denoted by an asterisk*

Analysis Robust Meta	Variable Name	Description	Type	Unit	Enumeration
● ● ●	CustomerID*	Unique customer identifier	ALPHANU MERIC		
● ● ●	UsagePointID*	Geographic identifier for this customer's location	ALPHANU MERIC		



● ● ● UsagePointType	The type of geographic identifier used for this customer's location. Census block data should be the level of geographic identifier reported. If census block data is not readily available, NREL can provide a web service that a recipient can use on their internal system to convert an address into a census block level geographic identifier. If a recipient has concerns about reporting census block data, LBNL will work with that recipient to determine the most appropriate level of geographic identifier (e.g., census block group, zip code, etc.).	ENUM	ENUM Options: CENSUS BLOCK CENSUS BLOCK GROUP CENSUS TRACT ZIP CODE PLUS FOUR ZIP CODE
● ● ● ProjectID*	The SGIG project ID number	ENUM	
● ● ● SurveyId*	Unique survey identifier	ALPHANUMERIC	
○ -- -- CompletionStatus	Describes the completion status of this survey with this customer	ENUM	ENUM Options: COMPLETED PARTIALLY COMPLETED REFUSED NOT RETURNED NULL



<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> ResOwnership	Customer's response to housing ownership	ENUM	ENUM Options: RENT OWN DON'T KNOW REFUSED OTHER NULL
<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> ResType	Customer's response to residence type	ENUM	ENUM Options: SINGLE FAMILY DUPLEX APARTMENT 2-4 UNIT APARTMENT > 4 UNIT TOWNHOUSE MOBILE HOME DON'T KNOW REFUSED OTHER NULL
<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> ResCAC	Customer's response to whether there is central air conditioning	BOOLEAN	BOOLEAN OPTIONS: YES NO NULL



<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> ResRoomAC	Customer's response to whether there is room A/C	BOOLEAN	BOOLEAN OPTIONS: YES NO NULL
<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> ResNumRoomAC	Customer's response to number of room A/C units in the house	INTEGER [COUNT]	
<input type="radio"/> <input type="radio"/> <input type="radio"/> ResPT	Customer's response to programmable thermostat	BOOLEAN	BOOLEAN OPTIONS: YES NO NULL
<input type="radio"/> <input type="radio"/> <input type="radio"/> ResPTSet	Customer's response to programmable thermostat set to change temperature during the day	BOOLEAN	BOOLEAN OPTIONS: YES NO NULL
<input type="radio"/> <input type="radio"/> <input type="radio"/> ResElectricDryer	Customer's response to whether there is an electric dryer	BOOLEAN	BOOLEAN OPTIONS: YES NO NULL
<input type="radio"/> <input type="radio"/> <input type="radio"/> ResNumAdults	Customer's response to number of adults (18 or older) living in the residence	INTEGER [COUNT]	
<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> ResNumElderly	Customer's response to number of elderly (65 or older) living in the house	INTEGER [COUNT]	



<input type="radio"/> <input type="radio"/> <input type="radio"/> ResNumKids	Customer's response to number of children (under 18) living in the house	INTEGER [COUNT]	
<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> ResChronicIllness	Customer's response to chronic illness	BOOLEAN	BOOLEAN OPTIONS: YES NO NULL
<input type="radio"/> <input type="radio"/> <input type="radio"/> ResHome1To5	Customer's response to someone home M-F between hours of 1 and 5 PM	BOOLEAN	BOOLEAN OPTIONS: YES NO NULL
<input type="radio"/> <input type="radio"/> <input type="radio"/> ResWorkFulltime	Customer's response to someone in the home works full-time for pay	BOOLEAN	BOOLEAN OPTIONS: YES NO NULL
<input type="radio"/> <input type="radio"/> <input type="radio"/> ResWorkHome	Customer's response to someone in the home works from home at least once a week	BOOLEAN	BOOLEAN OPTIONS: YES NO NULL
<input type="radio"/> <input type="radio"/> <input type="radio"/> ResReceiptInfo	Customer's response to received information about the pilot	BOOLEAN	BOOLEAN OPTIONS: YES NO NULL



<input type="radio"/> <input type="radio"/> <input type="radio"/> ResInfoHelpful	Customer's response to found this information to be useful	BOOLEAN	BOOLEAN OPTIONS: YES NO NULL
<input type="radio"/> <input type="radio"/> <input type="radio"/> ResPrimaryLanguage	Customer's response to primary language	ENUM	ENUM Options: ENGLISH SPANISH CHINESE KOREAN VIETNAMESE RUSSIAN REFUSED OTHER NULL
<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> ResIncomeLevel	Customer's response to income level	ENUM	ENUM Options: LESS THAN \$10,000 \$10,000 TO LESS THAN \$20,000 \$20,000 TO LESS THAN \$30,000 \$30,000 TO LESS THAN \$40,000 \$40,000 TO LESS THAN \$75,000 \$75,000 TO LESS THAN \$90,000



			\$90,000 TO LESS THAN \$100,000 \$100,000 TO LESS THAN \$150,000 \$150,000 OR MORE DON'T KNOW REFUSED NULL
<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> ResEducationLevel	Customer's response to education level	ENUM	ENUM Options: NONE OR GRADE 1-8 HIGH SCHOOL INCOMPLETE GRADE 9-11 HIGH SCHOOL GRADUATE GRADE 12 OR GED TRADE OR VOCATIONAL SCHOOL AFTER HIGH SCHOOL SOME COLLEGE INCLUDING ASSOCIATE DEGREES COLLEGE GRADUATE POST GRADUATE OR PROFESSIONAL SCHOOL AFTER COLLEGE DON'T KNOW REFUSED NULL



<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> BusinessType	Customer's response to business type	ENUM	ENUM Options: AGRICULTURE/AGRICULTURAL PROCESSING ASSEMBLY/LIGHT INDUSTRY CHEMICALS/PAPER/REFINING FOOD PROCESSING GROCERY STORE/RESTAURANT LODGING HIGH TECH LUMBER/MINING/PLASTICS OFFICE OIL/GAS EXTRACTION RETAIL STONE/CLASS/CLAY/CEMENT TRANSPORTATION UTILITY OTHER NULL
<input type="radio"/> <input type="radio"/> <input type="radio"/> NonResSqFt	Non-residential customer's response to square feet	INTEGER [SQFT]	
<input type="radio"/> <input type="radio"/> <input type="radio"/> NonResFTEmployees	Non-residential customer's response to full time employees	INTEGER [COUNT]	
<input type="radio"/> <input type="radio"/> <input type="radio"/> NonResBusinessValue	Non-residential customer's response to business value	INTEGER [\$ /YEAR]	



<input type="radio"/> <input type="radio"/> <input type="radio"/>	NonResElectricityShareofBudget	Non-residential customer's response to electricity's share of the budget	DECIMAL	[ANNUAL PERCENT AGE]	Scale Range: 0 to 1
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Tariff Data Upload File (List of Tariff Rates)

The purpose of the data in this file is to list and describe each tariff rate that occurred before and during the study. If one tariff rate, indicated by TariffID, has rates that change over time, then a separate entry should be listed for each one indicated by different start dates in TariffStartDate.

In addition, a copy of all applicable tariff sheets should be uploaded in the "Document Upload File". Each TariffID and TariffStartDate used below should be identical to the name, excluding the extension, of the corresponding uploaded tariff sheet file, where TariffID and TariffStartDate are separated by an underscore "_", and the date in the file name is in mmddyyyy format (e.g., for TariffID="RES1" and TariffStartDate="6/1/2011", the corresponding tariff sheet uploaded in the "Document Upload File" should be named "RES1_06012011" (see examples below).

Data for this file should be uploaded for each of the following:

- Each tariff rate that occurred for every customer in the treatment group, control group, and group of customers not in the study.
- Time Periods for tariff data
 - Historical (12 months prior to beginning of treatment)
 - Throughout the study duration
- There should be one entry for each tariff rate.
- Unique key fields for this file are denoted by an asterisk*



Examples

Entries in the Tariff Data Upload File								Corresponding tariff sheet uploaded in the “Document Upload File”
	ProjectID	TariffID	TariffStartDate	Base RateType	Overlay RateType	TariffIDDesc	ReasonFor TariffChange	Name of the uploaded file
1	FFLP	RES1	6/1/2011	FLAT	CPR	Flat rate of \$0.089/kWh with a CPR overlay		“RES1_06012011.pdf”
2	“	RES1	6/1/2012	FLAT	CPP	Flat rate of \$0.089/kWh with a CPP overlay	Part of the CBS study	“RES1_06012012.pdf”
3	“	R2	5/15/2009	FLAT	NONE	Flat rate of \$0.092/kWh		“R1_05152009.pdf”
4	“	R2	11/23/2011	FLAT	NONE	Flat rate of \$0.113/kWh	New rate was approved	“R1_11232011.pdf”

Example 1: A utility with ProjectID="FFLP" has a tariff rate "RES1" which a certain group of customers in the CBS will be exposed to. Starting on 6/1/2011, tariff rate "RES1" is defined as a flat rate of 8.9 cents/kWh with CPR overlay but then changes on 6/1/2012 to a flat rate with CPP overlay. This utility should submit two records in this data file for "RES1": one that describes the flat rate with CPR overlay with a TariffID="RES1" and TariffStartDate=6/1/2011, and one that describes the flat rate with CPP overlay with a TariffID="RES1" and TariffStartDate=6/1/2012. Two tariff sheets should also be uploaded in the "Document Upload File", one that is named "RES1_06012011.pdf" (assuming the tariff sheet is in PDF format), and one that is named "RES1_06012012.pdf".



Example 2: This same utility also has a tariff rate “R2” which a certain group of customers in the CBS will be exposed to. Tariff rate “R2” is defined as a flat rate. Since 5/15/2009, tariff rate “R2” has been set at 9.2 cents/kWh but then increased on 11/23/2011 to a flat rate of 11.3 cents/kWh. This utility should submit two records in this data file for “R2”: one that describes the flat rate at 9.2 cents/kWh with a TariffID=“R2” and TariffStartDate=5/15/2009, and one that describes the flat rate at 11.3 cents/kWh with a TariffID=“R2” and TariffStartDate=11/15/2011. Two tariff sheets should also be uploaded in the “Document Upload File”, one that is named “R1_05152009.pdf” (assuming the tariff sheet is in PDF format), and one that is named “R1_11232011.pdf”

Analysis Robust Meta	Variable Name	Description	Type	Unit	Enumeration
● ● ●	ProjectID*	The SGIG project ID number	ENUM		
● ● ●	TariffID*	Tariff rate identifier	ALPHANU MERIC		
● ● ●	TariffStartDate*	For this tariff, the date that the rate descriptions below took effect.	DATE		
● -- --	BaseRateType	The base tariff rate type for this tariffID and TariffStartDate	ENUM		ENUM Options: FLAT INCLINING BLOCK DECLINING BLOCK TOU VPP RTP DEMAND ENERGY NULL



● -- -- OverlayRateType	The overlay rate type for this tariffID and TariffStartDate	ENUM	ENUM Options: CPP CPR NONE NULL
● -- -- TariffIDDesc	Description of this tariff ID and TariffStartDate	ALPHANU MERIC	
-- ● -- ReasonForTariffChange	Description of the reason that this TariffID changed over time indicated by different TariffStartDates	ALPHANU MERIC	

Customer Tariff Data Upload File (List of Rate Experienced by Each Customer)

The purpose of the data in this file is to list and describe the period in which each customer experienced each tariff rate (where the tariff rates are defined in the Tariff Data Upload File).

Data for this file should be uploaded for each of the following:

- Customers
 - Each treatment and control customer
 - A representative sample of those who were invited to participate in the study but declined the offer (each recipient should work with their TAG to determine the most appropriate size of the representative sample)
- Time Periods for tariff data
 - Historical Data (12 months prior to beginning of treatment)
 - Data throughout the study duration
- There should be one entry for each tariff rate for each customer.



- Unique key fields for this file are denoted by an asterisk*

Examples

Entries in the Customer Tariff Data Upload File						
	ProjectID	CustomerID	TariffID	TariffStartDate	TariffStartDateCust	TariffEndDateCust
1	FFLP	1001	R2	5/15/2009	8/6/2009	12/5/2011
2	"	"	R2	11/23/2011	12/6/2011	1/1/2013
3	"	1002	R2	5/15/2009	12/9/2010	8/8/2011
4	"	"	RES1	6/1/2011	8/9/2011	6/5/2012
5	"	"	RES1	6/1/2012	6/9/2012	1/1/2013

Example 3: A utility (ProjectID="FFLP") has the tariff rates described above in Examples 1 and 2, rates "R2" and "RES1". The TariffID = "R2" has two different rates associated with it: starting on TariffStartDate = "5/15/2009", "R2" is a flat rate set at 9.2 cents/kWh, but then on TariffStartDate = "11/23/2011", "R2" increased to a flat rate set at 11.3 cents/kWh. The TariffID = "RES1" also has two different rates associated with it: starting on TariffStartDate = "6/1/2011", "RES1" is a flat rate with a CPR overlay, but on TariffStartDate = "6/1/2012", "RES1" changes to a CPP overlay.

Customer 1001 started to receive rate "R2" on 8/6/2009, and was kept on "R2" for the duration of the study until 1/1/2013. She always receives her bill on the 6th day of each month, and so if her rate changes, the change will occur for her on the 6th day of the month. Therefore for this customer, because "R2" changes from 9.2 to 11.3 cents/kWh, there should be two entries for CustomerID = "1001": first, starting on TariffStartDateCust = "8/6/2009", she experiences the rate defined by TariffID = "R2" and TariffStartDate =



“5/15/2009”; and second, starting on TariffStartDateCust = “12/6/2011”, she experiences the rate defined by TariffID = “R2” and TariffStartDate = “11/23/2011”. (In this example, even though the tariff rate changed on TariffStartDate = “11/23/2011”, she didn’t experience the change until TariffStartDateCust = “12/6/2011”).

Example 4: Using the same utility and the same rates as in Examples 1-3, customer 1002 started to receive rate “R2” on 12/9/2010, and then as part of the study was transitioned to “RES1” on 8/9/2011 (rate changes always occur for her on the 9th day of the month), and remained on “RES1” for the duration of the study until 1/1/2013. Because “RES1” changed from a CPR to a CPP rate on 6/1/2012, this customer’s rate will change from a CPR to a CPP on 6/9/2012. Therefore for this customer, there should be three entries for CustomerID = “1002”: first, starting on TariffStartDateCust = “12/9/2010”, she experiences the rate defined by TariffID = “R2” and TariffStartDate = “5/15/2009”; second, starting on TariffStartDateCust = “8/9/2011”, she experiences the rate defined by TariffID = “RES1” and TariffStartDate = “6/1/2011”; third, starting on TariffStartDateCust = “6/9/2012”, she experiences the rate defined by TariffID = “RES1” and TariffStartDate = “6/1/2012”.

Analysis Robust Meta	Variable Name	Description	Type	Unit	Enumeration
	● ● ● CustomerID*	Unique customer identifier	ALPHANU MERIC		
	● ● ● UsagePointID*	Geographic identifier for this customer’s location	ALPHANU MERIC		



● ● ● UsagePointType	The type of geographic identifier used for this customer's location. Census block data should be the level of geographic identifier reported. If census block data is not readily available, NREL can provide a web service that a recipient can use on their internal system to convert an address into a census block level geographic identifier. If a recipient has concerns about reporting census block data, LBNL will work with that recipient to determine the most appropriate level of geographic identifier (e.g., census block group, zip code, etc.).	ENUM	ENUM Options: CENSUS BLOCK CENSUS BLOCK GROUP CENSUS TRACT ZIP CODE PLUS FOUR ZIP CODE
● ● ● ProjectID*	The SGIG project ID number	ENUM	
● ● ● TariffID*	Tariff rate identifier	ALPHANUMERIC	
● ● ● TariffStartDate*	Start date of the TariffID (as defined in the Tariff Data Upload File)	DATE	
● -- -- TariffStartDateCust	Date that this customer began taking service under the rate defined by the above TariffID and TariffStartDate due to their particular bill cycle	DATE	



- | | | |
|---------|-------------------|--|
| ● -- -- | TariffEndDateCust | Date that this customer stopped taking DATE service under this TariffID rate and accompanying TariffStartDate due to their particular bill cycle |
|---------|-------------------|--|

Event Data Upload File (List of All Events)

The purpose of the data in this file is to list and describe each event that occurred before and during the study.

Data for this file should be uploaded for each of the following:

- Frequency
 - Each event
- Time Periods for event data
 - Historical Data (12 months prior to beginning of treatment)
 - Data throughout the study duration
- There should be one version for each event
- Unique key fields for this file are denoted by an asterisk*

Analysis Robust Meta	Variable Name	Description	Type	Unit	Enumeration
	● ● ● ProjectID*	The Unique SGIG project ID number	ENUM		



● ● ● EventID*	Unique identification number of the event (there should be one entry for each event).	ALPHANUMERIC	
● -- -- EventStartTimeUtility	Day and time that the event started	MM/DD/YYYY HH:MM:SS	
● -- -- EventDurationUtility	Number of seconds that the event lasted	NUMERIC [SECONDS]	
-- ○ ○ EventCriteriaCode	The reason that this event occurred	ENUM	ENUM Options: ECONOMICS SHORT TERM RELIABILITY LONG TERM RELIABILITY
-- ○ ○ EventCriteriaDesc	A description of the criteria for this event occurring (e.g., there is a temperature or a price threshold that triggers an event)	ALPHANUMERIC	

Cust Event Note Upload File (Events Experienced by Each Customer)

The purpose of the data in this file is to list and describe each event that is experienced by each customer. It catalogs attempts to notify each appropriate participating customer of an impending curtailment event. During the consumer behavior study, data will be collected



from each participating treatment and control customer in order to better understand how being exposed to treatment affected electricity consumption behavior.

Data for this file should be uploaded for each of the following:

- Customers
 - Each treatment and control customer that experiences or is notified about an event
- Frequency
 - Each event for each customer
- Time Periods for event data
 - The duration of time that the customer experienced or was notified about events (e.g., throughout the duration that the customer is enrolled in the study and prior to the study if the customer experienced or was notified of events in the 12 months before the study began).
- There should be one entry for each event for each customer
- Unique key fields for this file are denoted by an asterisk*

Analysis Robust Meta	Variable Name	Description	Type	Unit	Enumeration
● ● ●	CustomerID*	Unique customer identifier	ALPHANU MERIC		
● ● ●	UsagePointID*	Geographic identifier for this customer's location	ALPHANU MERIC		



● ● ● UsagePointType	The type of geographic identifier used for this customer's location. Census block data should be the level of geographic identifier reported. If census block data is not readily available, NREL can provide a web service that a recipient can use on their internal system to convert an address into a census block level geographic identifier. If a recipient has concerns about reporting census block data, LBNL will work with that recipient to determine the most appropriate level of geographic identifier (e.g., census block group, zip code, etc.).	ENUM	ENUM Options: CENSUS BLOCK CENSUS BLOCK GROUP CENSUS TRACT ZIP CODE PLUS FOUR ZIP CODE
● ● ● ProjectID*	The Unique SGIG project ID number	ENUM	
● ● ● EventID*	Unique identification number of the event as defined in the Event Data Upload File. There should be one entry for each event per customer (e.g., if one customer experiences 8 events, there should be 8 entries for that customer).	ALPHANUMERIC	



● -- -- EventStartTimeCust	Day and time that this event started for this customer	MM/DD/YYYY HH:MM:SS	
● -- -- EventDurationCust	Number of seconds that this event lasted for this customer	NUMERIC [SECONDS ³]	
● -- -- PCTUtilitySetDuringEvent	This customer's PCT was set by the utility during this event	BOOLEAN	BOOLEAN Options: YES NO
-- ○ ● NotificationType	Type of notification provided to this customer for this event (e.g., email, phone, text, pager)	ENUM	ENUM Options: EMAIL PHONE TEXT MESSAGE PAGER NULL
-- ○ ● AdvanceNotificationHours	Number of hours ahead of time notification is provided to this customer for this event	DECIMAL [HOURS]	

³ The industry standard format for reporting utility event duration is in seconds (see the Standards Reference NAESB REQ 18/WEQ19).



-- <input type="radio"/> <input type="radio"/> NotificationSuccessful	The notification to this customer for this event was successfully delivered	BOOLEAN	BOOLEAN Options: YES NO
-- <input type="radio"/> <input type="radio"/> FailureReason	If notification delivery failed, reason (email bounced, phone - no answer)	ENUM	BOOLEAN Options: EMAIL BOUNCED PHONE NOT ANSWERED OTHER NULL

Billing Data Upload File

The purpose of the data in this file is to list and describe key monthly billing information for each customer during pre-treatment and post-treatment periods.

Data for this file should be uploaded for each of the following:

- Customers
 - Each treatment and control customer
 - A representative sample of those who were invited to participate in the study but declined the offer (each recipient should work with their TAG to determine the most appropriate size of the representative sample)
- Frequency
 - Each Bill (e.g., monthly)
- Time Periods for billing data
 - Historical Data (12 months prior to beginning of treatment)
 - Data throughout the study duration
- There should be one entry for each bill cycle for each customer



- Unique key fields for this file are denoted by an asterisk*

Analysis Robust Meta	Variable Name	Description	Type	Unit	Enumeration
● ● ●	CustomerID*	Unique customer identifier	ALPHANU MERIC		
● ● ●	UsagePointID*	Geographic identifier for this customer's location	ALPHANU MERIC		
● ● ●	UsagePointType	The type of geographic identifier used for this customer's location. Census block data should be the level of geographic identifier reported. If census block data is not readily available, NREL can provide a web service that a recipient can use on their internal system to convert an address into a census block level geographic identifier. If a recipient has concerns about reporting census block data, LBNL will work with that recipient to determine the most appropriate level of geographic identifier (e.g., census block group, zip	ENUM		ENUM Options: CENSUS BLOCK CENSUS BLOCK GROUP CENSUS TRACT ZIP CODE PLUS FOUR ZIP CODE



	code, etc.).	
● ● ● ProjectID*	The SGIG project ID number	ENUM
● ● ● BillCycleID*	Unique bill cycle identifier. There should be one entry per customer per month.	ALPHANUMERIC
● ● ● BillCycleStartDate*	Date that this bill cycle started for this customer	DATE
● -- -- BillCycleEndDate	Date that this bill cycle ended for this customer	DATE
● -- -- BillCycleAmount	Monthly electricity bill amount in \$	DECIMAL [\$/BILLCYCLE]
BillCycleAllInRate	The all-in volumetric retail rate, in \$/kWh, that is applicable for this customer during this billing cycle. This includes electricity commodity charges (e.g., fuel costs), transmission and distribution charges, and additional cost trackers and/or riders, but excluding monthly customer charges.	DECIMAL [\$/kWh]
● -- -- BillCyclekWh	Monthly electricity amount in kWh	DECIMAL [kWh/BILLCYCLE]



● -- -- BillCyclekW	Monthly demand in kW, if applicable	DECIMAL	[kW/BILL CYCLE]
● -- -- ShadowBillAmount	Monthly shadow bill amount in \$, if applicable	DECIMAL	[\$/BILLCY CLE]
● -- -- BillProtectionAmount	Bill protection adjustment amount in \$, if applicable	DECIMAL	[\$/BILLCY CLE]

Time Series Upload File Format (Hourly Energy Use Data)

The purpose of the data in this file is to list and describe the relevant hourly data (e.g., energy, weather, retail rate) for each customer during pre-treatment and post-treatment periods.

Data for this file should be uploaded for each of the following:

- Customers
 - Each treatment and control customer



- A representative sample of those who were invited to participate in the study but declined the offer (each recipient should work with their TAG to determine the most appropriate size of the representative sample)
- Frequency
 - Hourly
- Time Periods for usage data
 - Historical Data (12 months prior to beginning of treatment)
 - Data throughout the study duration
- There should be one entry for each hour for each customer
- Unique key fields for this file are denoted by an asterisk*

Analysis Robust Meta	Variable Name	Description	Type	Unit	Enumeration
● ● ●	ProjectID*	The SGIG project ID number	ENUM		
● ● ●	CustomerID*	Unique customer identifier	ALPHANU MERIC		
● ● ●	DateTimeStamp*	Time and date for this energy usage	DATETIM E	[MM/DD /YYYY HH:MM:S S]	
● ● ●	UsagePointID*	Geographic identifier for this customer's location	ALPHANU MERIC		



● ● ● UsagePointType	The type of geographic identifier used for this customer's location. Census block data should be the level of geographic identifier reported. If census block data is not readily available, NREL can provide a web service that a recipient can use on their internal system to convert an address into a census block level geographic identifier. If a recipient has concerns about reporting census block data, LBNL will work with that recipient to determine the most appropriate level of geographic identifier (e.g., census block group, zip code, etc.).	ENUM	ENUM Options: CENSUS BLOCK CENSUS BLOCK GROUP CENSUS TRACT ZIP CODE PLUS FOUR ZIP CODE
● -- -- Energy	Energy in kWh for this customer at this time	NUMERIC [kWh]	
● -- -- EnergyAccumulationType	The way in which this energy data is accumulated (ENUM options are from the Standards Reference NAESB REQ 18/WEQ19; see footnote at the end of the table for definitions)	ENUM	ENUM Options*: NULL Bulk Quantity Cumulative Delta Data Indicating Summation Instantaneous



<input type="radio"/>	--	--	Power (Not Required)	Power in kW for this customer at this time	NUMERIC [kW]	
<input type="radio"/>	--	--	PowerAccumulationType (Not Required)	The way in which this power data is accumulated	ENUM	ENUM Options*: NULL Bulk Quantity Cumulative Delta Data Indicating Summation Instantaneous
<input type="radio"/>	--	--	PowerFactor (Not Required)	The Power Factor for this customer at this time	NUMERIC	
<input type="radio"/>	--	--	PowerFactorAccumulationType (Not Required)	The way in which this power factor data is accumulated	ENUM	ENUM Options*: NULL Bulk Quantity Cumulative Delta Data Indicating Summation Instantaneous
<input type="radio"/>	--	--	Voltage (Not Required)	The voltage in Volts for this customer at this time	NUMERIC [Volts]	
<input type="radio"/>	--	--	VoltageAccumulationType	The way in which this voltage data is	ENUM	ENUM Options*:



(Not Required)	accumulated		NULL Bulk Quantity Cumulative Delta Data Indicating Summation Instantaneous
● -- -- WeatherStationID	A unique weather station identifier	ALPHANUMERIC	
WeatherAccumulationType	The way in which the below weather data is accumulated	ENUM	ENUM Options*: NULL Bulk Quantity Cumulative Delta Data Indicating Summation Instantaneous
● -- -- DryBulbTemp	Dry bulb temperature in degrees Fahrenheit from the nearest weather station to this customer during the time indicated by the DateTimeStamp	NUMERIC [C]	
● -- -- WetBulbTemp	Wet bulb temperature in degrees	NUMERIC [C]	



	Fahrenheit from the nearest weather station to this customer during the time indicated by the DateTimeStamp	
● -- -- DewPointTemp	Dew point temperature in degrees Fahrenheit from the nearest weather station to this customer during the time indicated by the DateTimeStamp	NUMERIC [C]
● -- -- TariffRate	The tariff rate stated on the utility tariff sheets, in \$/kWh, that is applicable for this customer during the time indicated by the DateTimeStamp (i.e., excluding monthly customer charges and excluding all trackers and/or riders).	NUMERIC [\$/kWh]
○ -- -- PageViews	Number of page views and click-through for data on the website for this customer during the time indicated by the DateTimeStamp	INTEGER [Count/hour]
○ -- -- PCTSetPoint	The temperature set by the customer on their PCT during the time indicated by the DateTimeStamp (leave blank if the customer's PCT was not set by the customer at this time and/or the set point was not collected by the utility).	NUMERIC [C]



<input type="radio"/> -- --	UtilityPCTSetPoint	The temperature set by the utility on this customer's PCT during the time indicated by the DateTimeStamp (leave blank if the customer's PCT was not set by the utility at this time and/or the set point was not collected by the utility).	NUMERIC [C]	
-- <input checked="" type="radio"/> --	CustPCTOverride	This customer overrode the utility's setting of their PCT during the time indicated by the DateTimeStamp	BOOLEAN	BOOLEAN Options: YES NO NULL
<input type="radio"/> -- - -	IHDBacklightCount	Number of times this customer activated the IHD's backlight during the time indicated by the DateTimeStamp	INTEGER [Count/hour]	
<input type="radio"/> -- --	HelpCenterAccessCount	Number of times this customer accessed the Help Center during the time indicated by the DateTimeStamp	INTEGER [Count/hour]	

*The definition of AccumulationType field ENUM options are from the Standards Reference NAESB REQ 18/WEQ19:

"Accumulation behavior of a reading over time, usually 'measuringPeriod', to be used with individual endpoints (as opposed to 'macroPeriod' and 'aggregate' that are used to describe aggregations of data from individual endpoints).

1. NULL: Initial or default value for data element when the database structure is created.



2. *Bulk Quantity: A value from a register which represents the bulk quantity of a commodity. This quantity is computed as the integral of the commodity usage rate. This value is typically used as the basis for the dial reading at the meter, and as a result, will roll over upon reaching a maximum dial value.*
3. *Cumulative: The sum of the previous period values. Note: "Cumulative" is commonly used in conjunction with "demand." Each demand reset causes the maximum demand value for the present billing period (since the last demand reset) to accumulate as an accumulative total of all maximum demands. So instead of "zeroing" the demand register, a demand reset has the affect of adding the present maximum demand to this accumulating total.*
4. *Delta Data: The difference between the value at the end of the prescribed interval and the beginning of the interval. This is used for incremental interval data. Note: One common application would be for load profile data, another use might be to report the number of events within an interval (such as the number of equipment energizations within the specified period of time.)*
5. *Indicating: As if a needle is swung out on the meter face to a value to indicate the current value. (Note: An "indicating" value is typically measured over hundreds of milliseconds or greater, or may imply a "pusher" mechanism to capture a value. Compare this to "instantaneous" which is measured over a shorter period of time.)*
6. *Summation: A form of accumulation which is selective with respect to time. Note : "Summation" could be considered a specialization of "Bulk Quantity" according to the rules of inheritance where "Summation" selectively accumulates pulses over a timing pattern, and "BulkQuantity" accumulates pulses all of the time.*
7. *Instantaneous: Typically measured over the fastest period of time allowed by the definition of the metric (usually milliseconds or tens of milliseconds.) Basically the value of the reading at the moment of the time stamp. (Note: "Instantaneous" was moved to attribute #3 in 61968-9Ed2 from attribute #1 in 61968-9Ed1.)"*

Document Upload File (A Copy of All Applicable Files)

The purpose of this file is to upload copies of any documents that are relevant to the study.

- File Format



- The uploaded files can be in Word, PDF, Excel, JPEG, or another type of file format.
- File Name
 - The file name of each document must be unique and not contain any special characters. Valid characters for this field are 0 through 9, A through Z, single space “ ”, and underscore “_”. Don’t use other characters (e.g. #,/,”,&~, double space, etc.) in the filename as these are special characters that will need to be removed prior to accepting the collateral file and this data table.
 - Each file name should correspond with an ID entry used in another file (as described in detail under each type of file to be uploaded below).
- Types of files to be uploaded:
 - Survey Instruments
 - Include a copy of the survey instrument(s) or list of questions for each survey administered to customers for the study.
 - The name of each uploaded file (excluding the extension) should have an identical SurveyID entry used in the “Survey Admin Data Upload File”.
 - Marketing Collateral
 - Include a copy of any marketing materials used to recruit customers for the study (e.g., mailers, advertisements, or phone contact description).
 - The name of each uploaded file (excluding the extension) should have an identical CollateralID entry used in the “Recruitment Data Upload File”.
 - Tariff Sheets
 - Include a copy of tariff sheets for all tariff rates that occurred for at least 12 months before the study began, and throughout the study duration, for any customer in the treatment group, control group, and group of customers not in the study.
 - Each TariffID and TariffStartDate used in the “Tariff Data Upload File” should be identical to the name, excluding the extension, of the corresponding tariff sheet file uploaded here, where TariffID and TariffStartDate are separated by an underscore “_”, and the date in the file name is in mmddyyyy format (e.g., for TariffID=“RES1”



and TariffStartDate="6/1/2011 ", the corresponding tariff sheet uploaded here should be named "RES1_06012011".

- Education Material
 - Include a copy of any educational materials (e.g., letters, emails, or web-based tips or other education) given to customers in the study.
 - The name of each uploaded file (excluding the extension) should have an identical EducationID entry used in the "Exp Cell Data Upload File".
- Informational Technology Description
 - Include a picture of any information technology devices (e.g., IHDs, web-based feedback displays) used in the study and a description of its operation.
 - The name of each uploaded file (excluding the extension) should have an identical InfoTechID entry used in the "Exp Cell Data Upload File".
- Control Technology Description
 - Include a picture of any control technology devices (e.g., PCTs, DLCs) used in the study and a description of its operation.
 - The name of each uploaded file (excluding the extension) should have an identical ControlTechID entry used in the "Exp Cell Data Upload File".

Evaluation Data Upload File (List of Evaluation Efforts)

The purpose of the data in this file is to list and describe the key metrics that come out of the recipient's own evaluation effort. Each recipient is responsible for evaluating their SGIG consumer behavior study. The results of those evaluations are of keen interest to DOE as this information will be used, in part, to summarize experiences, results and lessons learned across the different studies. See the updated Guidance Document 6 for a description of what should be included in the recipient's evaluation reports.



The data used to construct any table or figure included in the recipient's interim and/or final evaluation report(s) that lists treatment impacts (e.g., econometric estimates of energy savings) should be submitted in an electronic format (e.g., Microsoft Excel tables, SAS file; but not PDF or JPEG formats). The LBNL research team will work with each of the recipients on an as needed basis if there are concerns about which tables/figures to include, what data from these tables/figures to include, and what format to provide this data in.⁴

⁴ It is understood that not every CBS recipient will be producing all of the load impacts and elasticity values originally included in the SGIG Metrics and Benefits Guidebook. As such, we have tried to make this file generic enough to accommodate the various results that will come out of all the different CBS recipient's evaluation efforts. Developing the content for this file, more than any other, will likely require direct interaction between each recipient and the LBNL research team.